

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-4. (Canceled)

5. (Currently Amended) A method of manufacturing a semiconductor device, said method comprising the steps of:

forming a first amorphous semiconductor film comprising silicon and germanium on an insulating surface wherein a concentration of the germanium is within a range of 0.1 atom% to 10 atom%;

forming a second amorphous semiconductor film on and in contact with the first amorphous semiconductor film so that a combined thickness of the first and second amorphous semiconductor films is within a range of 20-100 nm; and

crystallizing each of the first and second amorphous semiconductor films by irradiating with an excimer laser light.

6. (Currently Amended) A method of manufacturing a semiconductor device, said method comprising the steps of:

forming at least an electrode on an insulating surface;

forming an insulating film covering the electrode;

forming a first amorphous semiconductor film comprising silicon and germanium on the insulating film wherein a concentration of the germanium is within a range of 0.1 atom% to 10 atom%;

forming a second amorphous semiconductor film on and in contact with the first

~~amorphous semiconductor film so that a combined thickness of the first and second amorphous semiconductor films is within a range of 20-100 nm; and~~

crystallizing each of the first and second amorphous semiconductor films by irradiating with an excimer laser light.

7. (Original) A method according to claim 5, wherein the second amorphous semiconductor film includes silicon.

8-14. (Canceled)

15. (Currently Amended) A method of manufacturing a semiconductor device, said method comprising the steps of:

forming a first amorphous semiconductor film including silicon and germanium on an insulating surface wherein a concentration of the germanium is within a range of 0.1 atom% to 10 atom%;

~~forming a second amorphous semiconductor film including silicon on the first amorphous semiconductor film so that a combined thickness of the first and second amorphous semiconductor films is within a range of 20-100 nm;~~

providing an element capable of promoting crystallization of silicon in contact with the first amorphous semiconductor film or the second amorphous semiconductor film after forming the second amorphous semiconductor film; and

crystallizing each of the first and second amorphous semiconductor films by heating to form a first crystalline semiconductor film and a second crystalline semiconductor film, respectively.

16. (Currently Amended) A method of manufacturing a semiconductor device, said method comprising the steps of:

forming a first amorphous semiconductor film including silicon and an element having a

larger atomic radius than silicon on an insulating surface wherein a concentration of said element is within a range of 0.1 atom% to 10 atom%;

forming a second amorphous semiconductor film including silicon on the first amorphous semiconductor film—so that a combined thickness of the first and second amorphous semiconductor films is within a range of 20-100 nm;

providing an element capable of promoting crystallization of silicon in contact with the first amorphous semiconductor film or the second amorphous semiconductor film after forming the second amorphous semiconductor film; and

crystallizing each of the first and second amorphous semiconductor films by heating to form a first crystalline semiconductor film and a second crystalline semiconductor film, respectively.

17. (Previously Presented) A method according to claim 15, further comprising the step of:

irradiating with a laser light to obtain a higher crystallinity of each of the first and second crystalline semiconductor films after the crystallizing step.

18. (Previously Presented) A method according to claim 15, further comprising the step of:

irradiating with a light from one selected from the group consisting of a halogen lamp, a xenon lamp, a mercury lamp, a metal halide lamp as a light source to obtain a higher crystallinity of each of the first and second crystalline semiconductor films after the crystallizing step.

19. (Original) A method according to claim 15,
wherein each of the first and second semiconductor films is formed by a plasma CVD apparatus,
wherein a turbo molecular pump is used in an exhaust means connected to a reaction chamber of the plasma CVD apparatus.

20-22. (Canceled)

23. (Original) A method according to claim 6, wherein the second amorphous semiconductor film includes silicon.

24-28. (Canceled)

29. (Previously Presented) A method according to claim 16, further comprising the step of:

irradiating with a laser light to obtain a higher crystallinity of each of the first and second crystalline semiconductor films after the crystallizing step.

30. (Previously Presented) A method according to claim 16, further comprising the step of:

irradiating with a light from one selected from the group consisting of a halogen lamp, a xenon lamp, a mercury lamp, a metal halide lamp as a light source to obtain a higher crystallinity of each of the first and second crystalline semiconductor films after the crystallizing step.

31. (Original) A method according to claim 16,

wherein each of the first and second semiconductor films is formed by a plasma CVD apparatus,

wherein a turbo molecular pump is used in an exhaust means connected to a reaction chamber of the plasma CVD apparatus.

32-34. (Canceled)

35. (Currently Amended) A method of manufacturing a semiconductor device, said

method comprising the steps of:

forming a first amorphous semiconductor film comprising silicon and germanium on an insulating surface wherein a concentration of the germanium is within a range of 0.1 atom% to 10 atom%;

forming a second amorphous semiconductor film on and in contact with the first amorphous semiconductor film so that a combined thickness of the first and second amorphous semiconductor films is within a range of 20-100 nm;

providing an element capable of promoting crystallization of silicon in contact with the first amorphous semiconductor film or the second amorphous semiconductor film; and

crystallizing each of the first and second amorphous semiconductor films by irradiating with a laser light.

36. (Currently Amended) A method of manufacturing a semiconductor device, said method comprising the steps of:

forming at least an electrode on an insulating surface;

forming an insulating film covering the electrode;

forming a first amorphous semiconductor film comprising silicon and germanium on the insulating film wherein a concentration of the germanium is within a range of 0.1 atom% to 10 atom%;

forming a second amorphous semiconductor film on and in contact with the first amorphous semiconductor film so that a combined thickness of the first and second amorphous semiconductor films is within a range of 20-100 nm;

providing an element capable of promoting crystallization of silicon in contact with the first amorphous semiconductor film or the second amorphous semiconductor film; and

crystallizing each of the first and second amorphous semiconductor films by irradiating with a laser light.

37. (Previously Presented) A method according to claim 35, wherein the second

amorphous semiconductor film includes silicon.

38. (Previously Presented) A method according to claim 36, wherein the second amorphous semiconductor film includes silicon.

39. (Currently Amended) A method of manufacturing a semiconductor device, said method comprising the steps of:

forming a first amorphous semiconductor film comprising silicon and germanium on an insulating surface wherein a concentration of the germanium is within a range of 0.1 atom% to 10 atom%;

forming a second amorphous semiconductor film on and in contact with the first amorphous semiconductor film so that a combined thickness of the first and second amorphous semiconductor films is within a range of 20-100 nm;

providing an element capable of promoting crystallization of silicon in contact with the first amorphous semiconductor film or the second amorphous semiconductor film; and

crystallizing each of the first and second amorphous semiconductor films by irradiating with an excimer laser light.

40. (Currently Amended) A method of manufacturing a semiconductor device, said method comprising the steps of:

forming at least an electrode on an insulating surface;

forming an insulating film covering the electrode;

forming a first amorphous semiconductor film comprising silicon and germanium on the insulating film wherein a concentration of the germanium is within a range of 0.1 atom% to 10 atom%;

forming a second amorphous semiconductor film on and in contact with the first amorphous semiconductor film so that a combined thickness of the first and second amorphous semiconductor films is within a range of 20-100 nm;

providing an element capable of promoting crystallization of silicon in contact with the first amorphous semiconductor film or the second amorphous semiconductor film; and

crystallizing each of the first and second amorphous semiconductor films by irradiating with a laser light.

41. (Previously Presented) A method according to claim 39, further comprising the step of:

irradiating with a laser light to obtain a higher crystallinity of each of the first and second crystalline semiconductor films after the crystallizing step.

42. (Previously Presented) A method according to claim 39, further comprising the step of:

irradiating with a light from one selected from the group consisting of a halogen lamp, a xenon lamp, a mercury lamp, a metal halide lamp as a light source to obtain a higher crystallinity of each of the first and second crystalline semiconductor films after the crystallizing step.

43. (Previously Presented) A method according to claim 39,
wherein each of the first and second semiconductor films is formed by a plasma CVD apparatus, and

wherein a turbo molecular pump is used in an exhaust means connected to a reaction chamber of the plasma CVD apparatus.

44. (Previously Presented) A method according to claim 40, further comprising the step of:

irradiating with a laser light to obtain a higher crystallinity each of the first and second crystalline semiconductor films after the crystallizing step.

45. (Previously Presented) A method according to claim 40, further comprising the step

of:

irradiating with a light from one selected from the group consisting of a halogen lamp, a xenon lamp, a mercury lamp, a metal halide lamp as a light source to obtain a higher crystallinity of each of the first and second crystalline semiconductor films after the crystallizing step.

46. (Previously Presented) A method according to claim 40,

wherein each of the first and second semiconductor films is formed by a plasma CVD apparatus, and

wherein a turbo molecular pump is used in an exhaust means connected to a reaction chamber of the plasma CVD apparatus.

47. (Previously Presented) A method according to claim 5 further comprising the step of patterning the first amorphous semiconductor film and the second amorphous semiconductor film before crystallizing each of the first amorphous semiconductor film and the second amorphous semiconductor film.

48. (Previously Presented) A method according to claim 6 further comprising the step of patterning the first amorphous semiconductor film and the second amorphous semiconductor film before crystallizing each of the first amorphous semiconductor film and the second amorphous semiconductor film.

49. (Previously Presented) A method according to claim 15 further comprising the step of patterning the first amorphous semiconductor film and the second amorphous semiconductor film before crystallizing each of the first amorphous semiconductor film and the second amorphous semiconductor film.

50. (Previously Presented) A method according to claim 16 further comprising the step of patterning the first amorphous semiconductor film and the second amorphous semiconductor

film before crystallizing each of the first amorphous semiconductor film and the second amorphous semiconductor film.

51. (Previously Presented) A method according to claim 35 further comprising the step of patterning the first amorphous semiconductor film and the second amorphous semiconductor film before crystallizing each of the first amorphous semiconductor film and the second amorphous semiconductor film.

52. (Previously Presented) A method according to claim 36 further comprising the step of patterning the first amorphous semiconductor film and the second amorphous semiconductor film before crystallizing each of the first amorphous semiconductor film and the second amorphous semiconductor film.

53. (Previously Presented) A method according to claim 39 further comprising the step of patterning the first amorphous semiconductor film and the second amorphous semiconductor film before crystallizing each of the first amorphous semiconductor film and the second amorphous semiconductor film.

54. (Previously Presented) A method according to claim 40 further comprising the step of patterning the first amorphous semiconductor film and the second amorphous semiconductor film before crystallizing each of the first amorphous semiconductor film and the second amorphous semiconductor film.

55. (Previously Presented) A method according to claim 5, wherein a concentration of oxygen, nitrogen and carbon in the first and second amorphous semiconductor films are less than $1 \times 10^{19}/\text{cm}^3$.

56. (Previously Presented) A method according to claim 6, wherein a concentration of

oxygen, nitrogen and carbon in the first and second amorphous semiconductor films are less than $1 \times 10^{19}/\text{cm}^3$.

57. (Previously Presented) A method according to claim 15, wherein a concentration of oxygen, nitrogen and carbon in the first and second amorphous semiconductor films are less than $1 \times 10^{19}/\text{cm}^3$.

58. (Previously Presented) A method according to claim 16, wherein a concentration of oxygen, nitrogen and carbon in the first and second amorphous semiconductor films are less than $1 \times 10^{19}/\text{cm}^3$.

59. (Previously Presented) A method according to claim 35, wherein a concentration of oxygen, nitrogen and carbon in the first and second amorphous semiconductor films are less than $1 \times 10^{19}/\text{cm}^3$.

60. (Previously Presented) A method according to claim 36, wherein a concentration of oxygen, nitrogen and carbon in the first and second amorphous semiconductor films are less than $1 \times 10^{19}/\text{cm}^3$.

61. (Previously Presented) A method according to claim 39, wherein a concentration of oxygen, nitrogen and carbon in the first and second amorphous semiconductor films are less than $1 \times 10^{19}/\text{cm}^3$.

62. (Previously Presented) A method according to claim 40, wherein a concentration of oxygen, nitrogen and carbon in the first and second amorphous semiconductor films are less than $1 \times 10^{19}/\text{cm}^3$.

63. (Previously Presented) A method according to claim 15, wherein the element is at least

one selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

64. (Previously Presented) A method according to claim 16, wherein the element is at least one selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

65. (Previously Presented) A method according to claim 35, wherein the element is at least one selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

66. (Previously Presented) A method according to claim 36, wherein the element is at least one selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

67. (Previously Presented) A method according to claim 39, wherein the element is at least one selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

68. (Previously Presented) A method according to claim 40, wherein the element is at least one selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

69. (New) A method according to claim 5, wherein the first amorphous semiconductor film is thinner than the second semiconductor film.

70. (New) A method according to claim 6, wherein the first amorphous semiconductor film is thinner than the second semiconductor film.

71. (New) A method according to claim 15, wherein the first amorphous semiconductor film is thinner than the second semiconductor film.

72. (New) A method according to claim 16, wherein the first amorphous semiconductor film is thinner than the second semiconductor film.

73. (New) A method according to claim 35, wherein the first amorphous semiconductor film is thinner than the second semiconductor film.

74. (New) A method according to claim 36, wherein the first amorphous semiconductor film is thinner than the second semiconductor film.

75. (New) A method according to claim 39, wherein the first amorphous semiconductor film is thinner than the second semiconductor film.

76. (New) A method according to claim 40, wherein the first amorphous semiconductor film is thinner than the second semiconductor film.

77. (New) A method according to claim 5, further comprising a step of forming an insulating film on the crystallized second amorphous semiconductor film after crystallizing each of the first and second amorphous semiconductor films.

78. (New) A method according to claim 6, further comprising a step of forming an insulating film on the crystallized second amorphous semiconductor film after crystallizing each of the first and second amorphous semiconductor films.

79. (New) A method according to claim 15, further comprising a step of forming an insulating film on the crystallized second amorphous semiconductor film after crystallizing each of the first and second amorphous semiconductor films.

80. (New) A method according to claim 16, further comprising a step of forming an insulating film on the crystallized second amorphous semiconductor film after crystallizing each of the first and second amorphous semiconductor films.

81. (New) A method according to claim 35, further comprising a step of forming an insulating film on the crystallized second amorphous semiconductor film after crystallizing each of the first and second amorphous semiconductor films.

82. (New) A method according to claim 36, further comprising a step of forming an insulating film on the crystallized second amorphous semiconductor film after crystallizing each of the first and second amorphous semiconductor films.

83. (New) A method according to claim 39, further comprising a step of forming an insulating film on the crystallized second amorphous semiconductor film after crystallizing each of the first and second amorphous semiconductor films.

84. (New) A method according to claim 40, further comprising a step of forming an insulating film on the crystallized second amorphous semiconductor film after crystallizing each of the first and second amorphous semiconductor films.

85. (New) A method according to claim 77, wherein the insulating film comprises a gate insulating film.

86. (New) A method according to claim 78, wherein the insulating film comprises a gate insulating film.

87. (New) A method according to claim 79, wherein the insulating film comprises a gate insulating film.

88. (New) A method according to claim 80, wherein the insulating film comprises a gate insulating film.

89. (New) A method according to claim 81, wherein the insulating film comprises a gate insulating film.

90. (New) A method according to claim 82, wherein the insulating film comprises a gate insulating film.

91. (New) A method according to claim 83, wherein the insulating film comprises a gate insulating film.

92. (New) A method according to claim 84, wherein the insulating film comprises a gate insulating film.